MASTER

Mixed-use urban area, a boost for your municipality?
a theoretical business model for governments concerning mixed-use areas

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Summary

In 1996 the choice between mixed-use versus single-use real estate development was an important, yet in that time relatively neglected issue. No integral quality of the public space can be created due to independent and separate developments. This process will result in a fragmented urban city with limited public amenities. Nowadays mixed-use is mentioned as a trend in urban redevelopment. The unique way of mixing housing, commercial zones and work areas introduce a city centre with more variety, vitality and dynamic atmosphere into urban fabric. The problem is that there is no clear view which value characteristics are essential for value creation in mixed-use urban areas. More often these parties choose to develop a mixed-use area, due to the extensive functions in mixed-use it is difficult for public or private parties to assess which features should be added in the mixed-use areas. In this research the objective is to give public parties recommendations, which give a clear view on which features are important during the development of a mixed-use area. The target of this research is a business model for governments concerning the development of mixed use areas.

Mixed use areas are areas where a diversity of activities is executed within a specific area; important in these areas is that there is a strong office employment, retail complement, residential complement and leisure complement. In our research there is a focus on the leisure possibilities in the area. Mixed-use centers have, as expected, attained densities that far exceed the suburban norm for residential areas. Therefore, next to the investment profits, the benefits of mixed-use areas will create an interest by public as well as private parties. The revenues are high and the advantages of mixed-use area will create a favorable living and working environment.

Every authority, local or central, strives for quality improvements in urban areas. In the research there will be looked at value characteristics that are important for local authorities in mixed urban areas. The general vision of governments towards mixed-use area is that they can be seen as a positive influence towards the municipality. Starting a mixed-use area one of the important goals for local governments is to realize a dynamic, 24/7 and high living quality area, with the use of the three functions working, living and leisure. All these functions will be connected with high quality public areas/facilities and public transport functions that are demanded or controlled by the local authority.

In mixed-use development mixing different functions and involvement of many stakeholders makes it difficult for the success of the project. An important factor for succeeding in this is to optimize cooperation between public and private parties. This cooperation is influenced by the organizational structure.

The main goal in urban development projects is to create value. The various parties working together want to create value for themselves, for their organization and the specific area that is subjected to various interventions. Different value characteristics can create this value, value characteristics are characteristics which influence the value of the area in which they are implemented. With the development of a mixed-use area the value characteristics with the most positive influence should be implemented in the design. In general it can be concluded that the following factors influence the value of the area: accessibility, image, building properties, quality public space, facilities, livability, social environment, and knowledge infrastructure.
The following value characteristics in table 1 have the most positive influence on the development of a mixed-use area. The following value characteristics will be called "value drivers" because they influence the mixed-use area in a positive way.

Table 1 the value drivers based on QFD analysis

<table>
<thead>
<tr>
<th>Building composition</th>
<th>The value drivers</th>
<th>Public space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private owned property</td>
<td>Service business</td>
<td>Open spaces</td>
</tr>
<tr>
<td>&lt; 4 building layers</td>
<td>Creative business</td>
<td>Park</td>
</tr>
<tr>
<td>Renewal historic buildings</td>
<td>Governmental offices</td>
<td>High quality public domain</td>
</tr>
<tr>
<td><strong>Accessibility</strong></td>
<td><strong>Leisure possibilities</strong></td>
<td></td>
</tr>
<tr>
<td>Bus connection</td>
<td>Hotel</td>
<td>Theatre</td>
</tr>
<tr>
<td>Train station</td>
<td>Small shopping mall</td>
<td>Education facilities</td>
</tr>
<tr>
<td>Accessibility by car</td>
<td>Supermarket</td>
<td>Swimming pool</td>
</tr>
<tr>
<td>Connection with freeway and center</td>
<td>Sport facilities</td>
<td></td>
</tr>
</tbody>
</table>

Furthermore it can be concluded that the themes public space and accessibility have the most positive influence. This is a result of the Quality function deployment (QFD) method applied in the research because the QFD calculates with a relative weight linked with the composition of the mixed-use area. These two themes score high values on all three functions. Finally it can be concluded that the optimal allocation of functions in a mixed-use area is, 50% residential, 30% working and 20% leisure. This is the optimal allocation of functions, when the allocation is changed in the QFD model/design other value drivers can become the most positive value drivers.

The alliance model is the most suitable organization model when urban redevelopment is organized towards mixed-use development. All strengths in the SWOT analysis have positive effect on the value drivers to value development and quality of process (time planning, cost recovery and value capturing). The weaknesses of the alliance model can be influenced in a positive way when the trust bases is guaranteed and 'open' communication is strived for. Inside the business model (fig. 1), a global organization model is pointed out.
Governmental view on value characteristics in mixed-use areas

The starting point (alliance structure) of the business model can be seen as unique welling proposition. The unique welling propositions of mixed-use development are the unique resources such as the cooperation and knowledge that the alliance model initiates. The alliance model set up by the government is the resource that can create a unique position in the market and the ideal base in the business model towards the preferred value developments.

After the unique welling point based on the resources, the business model creates the passage towards the value development which the government wants to achieve. The goal of the business model is a helpful tool for governments in starting a redevelopment project converting it into a mixed-use area. The value configuration, value drivers, channeling and customer segment are the tools that need to be applied as mentioned to insure the goals of the government and other partners. Value developments that governments want to achieve are the unique selling points of the mixed-use area. When the whole process is achieved in a correct manner, as indicated in the business model, governments can achieve a unique product. This unique product (mixed-use area) distinguishes itself what will lead to the final goal: Value creation.

The financial component of the business model is not discussed, because of the fact that a government can't be seen as a company and the complexity of the financial structure for municipalities. In that case a research towards financial possibilities and more specific how the unique selling proposition change the revenues, cash flow and cost structure can complete the business model.

Relations between value characteristics are not converted into the survey. It is recommended to extend this research with linked relationships.
Preface

In this graduate report the results of a theoretical business model for governments concerning value characteristics that have the most positive influence on mixed-use areas is described. This graduate report is the last phase of the master thesis, Construction management and Engineering at the University of Technology of Eindhoven.

The research information and knowledge was for a large part made possible by several governmental experts of mixed-use projects in their municipality that given support, advice and cooperation towards the research. Through depth interviews and survey interaction with these governmental experts it was possible for us to examine the positive influences of different value characteristics in mixed-use development, composition of functions inside mixed-use areas and which organizational structure they approve during process.

The past 7 years we have completed two different technical studies that have transformed us in engineers with large technical knowledge and skills. This report is the final chapter of these transformations and represents the last assignment of our formal college based education. Herewith, we would like to thank Elfi de Wit, Kees Kokke and Wim Scheafer for accompanying us during the process. We sincerely appreciate their support over the past 6 months and their commitment to our success, in spite of some external problems.

We are grateful of our parents, close family, girlfriend and friends in supporting us during our research in discussing research subjects and giving us several different views on the research problems. Also in this case we thank our fellow students of the business platform and study partners; Twan Spanjers, Koen Moons, Oscar van der Vaart, Paul Redert, Richard Lee, Dennis Bakker, Ger Jansen, Bob Mantel, Jasper Snippe, Niels de Hoon and Niklaus Kleis. All our fellow students helped us thinking out of the box during process and making the goal of our research more powerful and structured.

This research exists of the core report and one appendix. If in the report facts or issues are not clear we are available and happy to answer them personally.

Rolf Drijhout van hooiff and Martijn Schrover
Eindhoven, August 2009
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**Governmental view on value characteristics in mixed-use areas**

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1 Cause of interest

1.1 Introduction

The establishment of nature in the Groningse residential area Meerstad has guaranteed 100 million Euro extra value towards this developing project. Housing prices increased because of the value driver ‘green’ that was established nearby. The research was done by L. Klokkenburg economy student at university Groningen. He mentioned in his report that presence of nature nearby residential areas (more specific housing) will increase 7.5% in value. Also surrounding houses within a circle of 3 kilometer of Meerstad will profit from the value driver ‘Nature’. Value capturing is in case of Meerstad not only the quality of housing, public space and facilities inside the residential area, but also other value drivers outside or nearby these developments.

The scarcity of land to be developed in the Netherlands has intensified the use of available land to our future needs. Mixed-use development is becoming a serious approach in municipalities that have already a good public transport system and services. In many suburban projects offices, retail use and commercial zoning are combined and not incorporating housing. Examples of this work, leisure combination are shown in the campus areas around Eindhoven. Mixed-use development combines several uses on one site in a coordinated way, including residential, working and leisure. (Interview H. Mertens)

Redevelopment of urban areas is a complex process in which more and more situations need large investments. In this, mixed-use development process three characteristics are important to view on: Work, recreation and livability. What ideal combination in work, recreation and living has an influence on value creation? Choice of a municipality how an area develops is a crucial step in the development process. Which ideal consistency between work, recreation and living are involved in different multi disciplinary projects, like ‘Strijp in Eindhoven’. (Interview T. de Joode)

“The redevelopment of Strijp S in Eindhoven starts with livability” is the quote mentioned by project manager Barry Storm from Strijp S (Cobouw august 2007). The phased departure of Philips out of the inner city of Eindhoven till 2011 will have major consequences for the urban development of Eindhoven. Lot’s of building ground will be available to create a second center nearby the main center. Also the use of the old Philips research buildings will create a dynamic, creative atmosphere (value capturing) towards the mixed-use area that will be developed.

One of the conclusions of the former Spatial strategy (Nota Ruimte, 2006) was that in some areas the development of new housing areas was not enough connected to the development of recreational projects or (public) infrastructural projects. Therefore there is no cohesion within an area, this results in a poor value creation. (Wolff, 2007) Also mentioned was that spatial policy making is lacking in this and organizing these developments on regional level is more feasible. Projects with several functions need a regional approach to be connected better. The Wolff also mentioned that not only decision making contributes, but also housing and other commercial development projects could contribute financially to make other regional projects feasible. (Wolff, 2007) The development strategy of mixing functions and starting process on a regional level makes value capturing in inner cities relevant.
Governmental action in urban redevelopment

Government is one of the major initiators for urban redevelopment and in that case one of the first organizations making decisions towards mixed-use development. Therefore involvement by governments in urban redevelopment areas converting into mixed-use areas is important in this research. In the Netherlands, the development process is often divided into land development and real estate development. The land development is the process which services the land and structures the whole area in different building lots. Governmental actions mentioned above are changing with more private stakeholders trying to involve their own interests into urban redevelopment. Thus governmental actions are changing their perspectives in urban redevelopment, this can be seen in the perspective of the new spatial planning act (Wro 2008). It appears that the new planning act enlarges the influence of the government in urban redevelopment instead of decreasing it.

Mixed-use in urban redevelopment

In 1996 the choice between mixed-use versus single-use real estate development was an important, yet in that time relatively neglected issue (Childs et al. 1996). No integral quality of the public space can be created due to independent and separate developments. This process will result in a fragmented urban city with limited public amenities. (Jansen Klomp 2007).

Nowadays mixed-use is mentioned as a trend in urban redevelopment. The unique way of mixing housing, commercial zones and work areas introduce a city centre with more variety, vitality and dynamic atmosphere into urban fabric. "All three functions closely related in time and space reduces the need to travel, conserve energy and reduce pollution" (Hoppensbrouwer and Louw, 2005). This could be the solution to a sustainable working and living environment, seen in the perspective of air pollution and global warmth. The research will lay its focus on a mixture of residential, working and leisure as visible in figure 1-1, because an industrial areas and residential combination is not suitable.
I.IV  Value characteristics in urban redevelopment

Which value characteristics have the most influence, return on investment and quality of life offered in the above mentioned mixed-use areas. The three functions that are combined within the mixed-use concept have their own value characteristics but more important can they decrease or increase the value of the different functions inside mixed-use development.

Attraction and image of redevelopment areas is one of the main factors which influence the increase of value in the mixed-use area. To create this attraction towards future businesses, users or inhabitants, the quality of living, working and leisure possibilities must be shown.

Composition, optimal use and overlap between different value characteristics are a necessity.

Value characteristics in urban development can differ from use of materials in public zones to use of old (historical) industrial buildings.

- Structures
- Density
- Public space
- Public
- Composition
- Safety
- Service
- Employment
- Accessibility
- Public transport
- Parking

Figure 1-2 Value tree (van Dam 2006)
II Problem description

II.1 Objective
During the initiative of a redevelopment project one of the first questions that should be answered is which function do the initiative parties want to apply to the new to be developed area. More often these parties choose to develop a mixed-use area, due to the extensive functions in mixed-use it is difficult for public or private parties to assess which features should be added in the mixed-use areas. In this research the objective is to give public parties recommendations, which give a clear view on which features are important during the development of a mixed-use area.

II.2 Problem definition
The design of a mixed-use area is a problem because:

<table>
<thead>
<tr>
<th>Problem definition:</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is no clear view which value characteristics governments find essential for value creation in mixed-use urban areas.</td>
</tr>
</tbody>
</table>

Due to the presence of many value characteristics in mixed-use areas the influence of these characteristics are not clear. During the development, the different (separated) value characteristics are known by governments. The problem is that the value characteristics for mixed-use areas are not properly known. Therefore the positive value development of mixed-use areas can not be shown. Important in these redevelopment projects is the choice of organizational structure, due to lack of knowledge (of governments) on market demands.

The target of this research can be formulated as followed:

<table>
<thead>
<tr>
<th>Target:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The target of this research is to design a business model which recommends governments with the design and organization of mixed-use areas.</td>
</tr>
</tbody>
</table>

Research questions
The main question in this research can be seen as followed:

<table>
<thead>
<tr>
<th>Main question:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which value characteristics influence a mixed-use urban area the most positive and how should the organizational structure be with this mixed-use redevelopment?</td>
</tr>
</tbody>
</table>

Sub-questions
Redevelopment of urban areas
- What is urban (re)-development?
- What does a mixed-use area look like?
  - What are the residential areas?
  - What are the working areas?
  - What are the leisure areas?
- What are the advantages and disadvantages of a mixed-use area?
Specific project: urban development for governments
- What is the general vision of governments towards mixed-use areas?
- What role do governments play in urban redevelopment projects?
- In what way do governments look at value creation in mixed-use areas?
- What organization is preferred in these redevelopment projects?

Value characteristics
- What are value characteristics?
- Which value characteristics have a positive influence on mixed-use areas?
  - What are value characteristics for offices?
  - What are value characteristics for residential areas?
  - What are value characteristics for leisure?
- Which characteristics do governments prefer to create value in mixed-use areas?

Business model
- What is a business model?
- How can the value characteristics be translated in a business model?

I.III Focus
To ensure the target of the research will be reached the research must be well defined. The following boundaries have been set:
- During this research the focus will be on the government, and more specific on the municipalities who want to develop a mixed-use area.
- The model is particularly suited and developed for urban redevelopment projects into mixed-use areas.
- The value aspect will be from the point of view from the government, the opinion of private parties will not be taken into account in this research.
- The preferred value characteristics in mixed-use areas will be assessed through a survey with governmental experts.
- The organizational structure of the model will be based on the literature and the depth interviews with governmental experts.
- The financial aspect for the development of a mixed-use area will not be researched.
- This research has its focus on urban redevelopment, old or declined urban areas which will be redeveloped into mixed-use areas.

I.IV Result
The Result of this research will be presented in a theoretical business model design for governments who want to develop mixed-use urban areas where residential, working and leisure are centralized.

I.V Context
The execution of the research will be under authority of the University of Technology of Eindhoven.
III Research proposal

Desk research input to research proposal

Analyzing specific literature

Global problem definition

Literature study

Selecting experts

Interviewing governmental experts

Survey value characteristics

Design matrix

Analyze outcomes matrix

Design business model

Interview experts

Conclusion from theory and practice

Research report

Explorative analyzing phase

Qualitative designing phase

Evaluation phase
Governmental view on value characteristics in mixed-use areas

III. I Type of research
Based on the research model different phases of our process are identified, in this chapter we will explain which activities will take place in each phase.

III. I Phase 1 pre research
In the literature study we will mainly focus on the different sub questions asked in the research approach. Eventually we will create a list of value characteristics which are most relevant in the redevelopment of an urban area into a mixed-use area. The value characteristics will be categorized in different main categories. This will be the bases for the survey.

Subjects pre research are: governments, mixed-use development, value characteristics and value development

III. II Phase 2 Qualitative research survey
The selection of the most important value characteristics which is preferred by the local government is the target of the survey. The research tool we will use is the Quality function Deployment (QFD) analysis in the form House of Quality (HOQ). It will be used for an expert survey by interviewing governmental experts in urban redevelopment projects.

The QFD implementation consists of first an open questionnaire and secondly of a survey based on the technique HOQ provides.

Finally the outcome of the survey will give qualitative information with the most important value characteristics relevant for the redevelopment to a mixed-use area.

Because the QFD analysis can not answer which organizational structure is the most suited for mixed-use developments, the interviews with the different experts will answer this question.

III. IV Phase 3 Design
Based on the literature, the depth interviews and the outcomes of the survey we will design a theoretical business model for local governments starting a mixed-use redevelopment project.

III. V Phase 4 Verification
For the verification 2 experts who where interviewed in an earlier stage of the research will be asked to give their opinion on the model and of its usefulness. Based on these interviews the model can be adjusted in the bits where the model comes short.
Reading Guide
The reading guide will give an overview of this research report about value drivers that influence value development in urban redevelopment towards mixed-use. All chapters will be explained by mean, goal and result. The reading guide's main goal is to overview the different chapters, and explains what decisions and conclusions were made: the red line of the research report.

Two parts appear in the research report: the first part is an explorative and analytical phase; the second part is a qualitative design phase.

First part: Explorative analyzing phase
In the first chapter the cause of interest gives a better look at problems and market trends that appear in the Netherlands in case of urban (re)development. Examples of positive and negative issues and governmental actions towards mixed-use development inside Dutch urban planning are the bases for the problem description.

The second chapter describes the problem, objective, target, type of research, research model and main-sub questions. All these subjects form the “red line” in the research report and will be linked with conclusions made after each chapter.

The Next three chapters (chapters 1, 2 and 3) lay their focus on the three key subjects in the research, “Mixed-use development”, “governmental views on urban redevelopment” and “value and value characteristics” in mixed-use areas. These chapters give boundaries towards our research to get the focus right in case of the goal, result and target. These chapters give answers to most of the sub questions and together form the bases of the depth interviews, survey, analysis and the qualitative design phase.

Chapter four is the research analysis, based on the depth interviews and the survey, based on two SWOT analyses a choice is made which organization model is the most suitable for developing mixed-use areas. Furthermore the best value drivers for mixed-use areas are identified with the survey and the Quality Function Deployment method.

Chapter five is theory about business models, what factors have to be present in a business model and how can these factors be applied and implemented.

Second part: Design phase
The Design phase in this research is chapter six. In this chapter a business model is developed for governments who want to start developing a mixed-use area.

Finally chapter seven gives the conclusions and recommendations of this research. The answer of the main question of this research is given in this chapter.
1 Mixed-use development

Introduction
In the Netherlands the term mixed-use development is a slightly unclear term. In this chapter the definition of mixed-use development will be given. Furthermore the activities in mixed-use areas will be explained, and why investing in mixed-use does have obstacles compared to single-use developments. Eventually the advantages and reasons for mixed-use developments compared to single use developments will be analyzed.

Definition of Mixed-use areas
Mixed-use real estate is known as large projects with different types of users. Those users have different interests in the building. Mixed-use real estate is a combined description for different combinations of users in a continuous area or in one compact building. There are different terms for mixed-use real estate; mixed-use buildings and mixed-use scheme. The difference is made between a vertical or horizontal diversification between the uses. In mixed-use buildings the difference between the uses is based on different layers, where a mixed-use scheme consists of different single use buildings which (together) form a mixed-use area. As shown in figure 1-1 (Sandberg 2007)

![Figure 1-1 Mixed-use areas](Sandberg 2007)

During this research it is clear that the focus will be on mixed-use areas. As said in the introduction and problem analysis it is unclear how and how much the external factors in an
area influence the value of the real estate. Therefore our focus will be on mixed-use urban schemes/areas. (From now on mixed-use areas)
Within these areas it is (for our research) not very important which kind of buildings form the mixed-use area. It can be all single-use buildings in the area with different kind of users, or an area with several mixed-use buildings, or an area with a combination of the above mentioned examples. Important is that a diversity of activities must be executed within a specific area, with a strong office employment and retail complement, and be developed at a density that is much higher than the suburban norm. (Filion 2000)

**Functions in a mixed-use area**

As said in the previous paragraph, the key in mixed-use development is the wide range of activities within an area. The mixture consists of residential, working and leisure activities. to get a clear view on what is meant by these terms the next page will focus on these activities.

**1.3.1 Residential**

In residential areas living is the most important aspect of the area. Most of the time there are already combinations in activities in the area, but this is in a very small scale. For example most of the larger residential areas already have a park or a playground for children. This is not the combination for this research; the combinations should be much more extreme.

The definition of residential areas in the van Dale is an area which mainly consists of homes. This definition does not suit this research because there will be a mixture of residential, working and leisure. As visible in the chapter "cause of interest" industrial areas can also be included into the mixed-use areas but industrial areas are not suited for an urban area.

One aspect we can subtract from this definition is that living is the core importance in residential housing.

In residential areas there are a few factors which determine the attractiveness of the area. According to Visser and van Dam (2006) these factors are:

- Building features
- Accessibility
- Image
- Facilities
- Social environmental characteristics (composition)
- Quality public space

These factors are very global, in the chapter "value and value characteristics" these factors will be specified and there will be an analyses of which are the most positive. But it can already be said that the above mentioned factors of residential areas have some close relations to factors available in mixed-use areas, for example the amount of facilities in mixed-use areas will be much higher than in residential areas.

**1.3.2 Working**

Working is one out of three functions available in mixed-use areas. Working is a function which can be very difficult to explain, especially in mixed-use areas. First we will explain what the term working means in this research, followed by important decision making factors for companies to settle in a specific area.

To define the term working areas this research will look to the term business parks because this term has the most mutual features. There are several definitions for business parks. The IBIS
Governmental view on value characteristics in mixed-use areas

(2007) uses the next definition: A densely occupied terrain used for trade, industry, and commercial services. Within this description there are also sections within the Business Parks, which are partly designed and suitable for office space.

The great dictionary of the Dutch language 14th edition, describes a Business Park as: An area where several businesses can be established.

In this research the definition of working areas will be the same, the survey in our research will find out which of the different kind of business is most suitable for mixed-use areas. For example, it can be assumed that industrial activities in mixed-use areas are not preferable. Working in mixed-use areas can have some advantages compared to business parks because, according to Willegers (2005), the choice to settle in a specific office building is depending on the following factors:

- Esthetic view of the building;
- Accessibility;
- Quality of living environment;
- Image of the area;
- Knowledge infrastructure.

As visible, there are some mutual factors with residential areas, therefore, with the development of mixed-use areas you can give these factors special attention. The chapter value will further research these factors and choices will be made about what factors should get special attention according to the government.

### 1.3.3 Leisure

Leisure is one of the three functions in a mixed-use area. The term leisure is used in many different ways and therefore defined in different ways. Many of these definitions are not applicable in our research. For example MKB-Netherlands (2005) gives a definition of the leisure industry, which says that leisure-features only count as leisure if an entree fee is paid. In different definitions some aspects are repeated several times, and it can be assumed that leisure is always focused on:

- Amusement, relaxation or enjoyment
- Outside your own home
- At a specific time

In our definition of leisure these functions will be taken into account because they describe the function characteristics of leisure real estate.

The recreation sector uses the term leisure to describe an activity, while the real estate sector uses the term leisure to characterize the function of there real estate. In our research the term will be used in both ways because both descriptions are applicable in our research.

In short the term leisure will be defined as an offering of commercial or non commercial real estate/areas where leisure is the main function and that the goal is to amuse, relax or entertain the customer.

If leisure functions are observed we can divide leisure in six subsectors:

- Health and sports
- Outdoor recreation
- Catering industry
- Accommodations
- Entertainment (part of the day)
- Entertainment (whole day)

(Koopmans (2007))
In sum, it has to be said again that the functions residential, working and leisure get interwoven more and more and therefore are depending on each other. This makes the distinction between for example retail and leisure real estate very difficult. In this research we will locate the retail activities in the mixed-use areas to the leisure function of the area.

1.3.4 Synergy in mixed-use areas

Due to the mixing of the above mentioned activities and the multiple use of space in mixed-use areas synergy develops itself. The public space in the area will be used by a diverse public. The different functions have a few factors in common which enforce the synergy:

- Accessibility
- Liveliness
- Image
- Qualitative public space
- Facilities

Investing in Mixed-use areas

As is written by Markowitz (1991), by a diversification of an investment a reduction of the volatility in value is created and therefore risks are lower. This theory is based on stock handling, but can also be applied in the real estate sector. The Modern Portfolio Theory proofs that when different investments, with a low correlation between the investments, are done the specific risks go down while the revenues stay the same. The relation between the amount of objects and the risk is visible in figure 1.4. It has to be said that the correlation in objects in real estate is higher than in stock markets due to the wider range of possible markets. According to Sandberg (2007) in practice the opposite effect takes place, developers point out that with the development of mixed-use real estate there are more risks than with the development of single use real estate. There are different reasons for this perception:

- For one they say that the development of mixed-use real estate is often developed for a specific sector, with its specific demands. Therefore the flexibility in the building is limited, while investors prefer a flexible, reorganizable object.
- Secondly to operate the building, the large institutional investors have to operate the building throughout different funds which makes it time consuming. Private investors on the other hand will not have this problem so they can profit from mixed-use development by lowering the risks by attracting different real estate sectors.
Finally Sandberg points out that the assessment of value for mixed-use areas is difficult due to the fact that the external value characteristics in mixed-use areas can not be assessed properly because the knowledge of the effect of these external factors is limited.

In figure 1-5 and 1-6 is visible that the overall return on investment in mixed-use real estate is average but if you analyze to the last 3 years it belongs to the top of the returns. In sum, for now it is difficult to assess the risks in mixed-use development and there are some investment obstacles for institutional investors but taken into account that the return for mixed-use real estate has increased the last few years, it can be assumed that the interest in mixed-use real estate will rise with this phenomenon.

The motivation for mixed-use areas

Till a few years ago a separation of functions was preferred in redevelopment projects, but this is about to change. A comparison between Dhr. Berlage and Dhr. Van Eesteren proves the fact that the approach of Berlage (mixing of functions) wins from the approach of van Eesteren (single use areas). In figure 1-7 is visible that the value creation of Berlage is better (the right block) than of van Eesteren (the left block) The areas from Berlage have an increase in value while van Eesteren has a decrease in value. Municipalities and governments acknowledge the value creation in mixed-use areas. The choice between mixed-use and single use real estate is therefore an important yet mostly neglected issue. According to Childs et al. a strong case can be made for mixed-use development due to the flexible zoning controls. The diversification between the different uses can allow a
decrease in risk to the investors. Combined office and retail strips can be found in almost any sufficiently populated city. In larger urban areas even the mix between retail, office, hotel and residential use is possible. The latter mostly combined in high density developments. There are several benefits to develop mixed land use, figure 1-5 shows the benefits for mixed-use areas.

![Figure 1-8 Benefits of mixed-use development (Coupland 1997)](image)

The book "mixed-use in theory and practice" acknowledges these benefits. Except for the literature, the experts that were interviewed for this research acknowledged a few of these benefits, especially the less use of the car was mentioned in the interviews. The experts explained this with the fact that the mixed-use areas should have or have a good accessibility by public transport and with the fact that all necessary leisure possibilities were in the neighborhood. Next to the less car use, the dynamic environment was a good reason for many municipalities to start mixed-use areas, because of the diversification of people using the area, the environment gets lively about 24 hours a day (which improves safety). The final benefit for mixed-use so far is the better use of facilities in the area. For example, the parking places will be used by the inhabitants of the area as well as the employees of the businesses, which creates a better return on investment on the parking places.

**Conclusion**

The mixed-use areas are areas where a diversity of activities is executed within a specific area, important in these areas is that there is a strong office employment, retail complement, residential complement and leisure complement. In our research there is a focus on the leisure possibilities in the area. The last complement has the ability to brand the area for visitors. Mixed-use centers have, as expected, attained densities that far exceed the suburban norm for residential areas. Due to clustering offices, retail, entertainment, public services and housing, these centers have achieved their mixed-use goals. Therefore, next to the investment profits, the benefits of mixed-use areas will create an interest by public as well as private parties. The revenues are high and the advantages of mixed-use area, as described in paragraph 1.5, will create a favorable living and working environment.
2 Governmental view on urban development

Introduction
Local governments until 1990 bought land that had to be developed and realized roads, parks and other public facilities necessary. Most (70% of the houses to be realized were social housing) of the developed area was sold to housing associations, to realize social housing.

Until 1990, in the Netherlands local government often was the most important party in land development, following a so – called active land development strategy (Korthals Altes, 2006).

After 1990 this practice of urbanization changed and private developers became more interested in buying land in these areas. New houses should, for the greater part, be realized in the market sector and social housing was limited by the central government, thus buying/owning land became less risky for these private developers. An important policy document in this is: The Fourth Report on Physical planning Extra (VINEK). A limited number of areas were pointed out for new urbanization; green and open areas should be protected, profitable public transport facilities were necessary. This new planning policy, the general rise of house prices, and participation of private developers in these times changed the traditional active land development the government often has to a more facilitating land policy.

In 2004 a new memorandum on National Spatial Strategy has been approved by parliament. (Nota Ruimte 2006) In the new spatial policy, development on a regional level is stimulated. An integrated approach on the regional level is regarded as important for improving spatial quality (Korthals Altes, 2006)

In this new spatial plan of the central government on of the issues concluded, was the lack of connections between the new housing areas and recreational areas or (public) infrastructure projects. One of the solutions of these not connecting areas is organizing spatial planning on a regional level instead a higher level of authority.
In this case an active role of local governments is asked in urban redevelopment projects, with a mixed-use intention. Spatial quality (value creation/value capturing) can be improved when the redevelopment of urban areas is approached on a regional level. Every municipality has his own needs and restrictions in there inner city development that they better understand which necessities are useful and which are not. These aspects will be discussed in the following chapters.

Definitions of government
Public parties in the Netherlands are divided into three levels: The central governments, province and local governments (municipalities). These three parties together form the government. In the Dutch ground rules and regulations is mentioned that urban and rural planning and the quality of urban development a responsibility is for the Dutch Government. So in the Dutch case of urban redevelopment/urban planning into mixed-use the local government is one of the important players.

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On 1 July 2008, the new law on urban planning (Wet ruimtelijke ordening WRO) and the ground exploitation law (GREX-wet) was implemented in the Netherlands. These changes in law and regulations changed the authorizations of public parties in particular. Central government is responsible for urban planning in a general way, while the local governments get a more active role.

In case of inner city redevelopment into a mixed-use area, the local municipalities in the Netherlands have a great influence on control regulations like structure and city plans. Because urban developments have to be approved by the counting structural plan and in this case the local government has an important regulating role (van de Ven, 2005). Further in the research report the local governments are being evaluated and looked at.

Approach governments in case of urban redevelopment
Traditionally the approach towards urban redevelopment came from the government, because of problem solving issues. Nowadays it becomes clearer that not public parties, but more prominent private parties take the lead in urban redevelopment (Daamen, 2005). This has consequences for organizational structures and financial structures that will be explained later.

In urban redevelopment into a mixed-use area, large inner city grounds, which are not approved any more by the standards in government plans, are opportunities. Inner city redevelopment is opposite to Greenfield development that has most of the time single use character, great scale development, and connecting to relative new existing building grounds (Keers, 2001). Inner city redevelopment at the other hand has a more central location at the edge of city centers, close to public transport.

Local governments have several opportunities in some cases problems inside their city boundaries that have potential to be developed into a mixed-use area:
- Declining heavy industry terrains that move to outside boundaries, cities or even to other countries (cheaper produce climate).
- Declined residential areas;
- Declined railway areas;
- Declined city centers;

All these terrains have excellent opportunities for increasing inner city commercial facilities and residential possibilities and in case of extensive use of all functions, mixed-use development. Viewing on these terrains governments have often long time planning issues and most of the time long recovery periods are necessary to regain all inner city building grounds. This is not always the case. For example: The development of Strijp S in the municipality of Eindhoven regaining building grounds for inner city development was made possible, because of the departure of Philips.

Organization approach in case of urban redevelopment
Organization structure in urban redevelopment can be organized in different models. Different models will be discussed that have been mentioned during the depth interviews and outcome of literature study. Every organization structure will be explained with examples of mixed-use developments in the Netherlands (Table in paragraph 4.4 gives detailed analysis). In mixed-use development there are three organization models mentioned that influence the success towards value creation: concession model, alliance model and traditional model.
2.4.1 Concession model

For the concession model the government has the role of client during the process towards urban redevelopment. The base of the model is a longtime contract, which exists of four elements for the investing project: design, construction, operate/maintain and finance. In this model there are several critical success factors that should be mentioned involving mixed-use inner city development. All parties involved should have clear objectives and constraints regarding the project and the private-public cooperation acquires a sufficient degree of insight in the reasonable expectations in which manner the relation can add value (Groenendijk, 2006). One of the mixed-use projects that work with the concession model is municipality of Rotterdam. For the project 'Kop van Zuid' there is a selection of private parties based on competition as much as possible about small areas inside the project area. The involvement of the number of parties is minimized in the project to create a healthy base to form the value drivers necessary in this area and surroundings given by the municipality Rotterdam. Most of the parties are well known by the local authorities, because of the early involvement of these parties during the initiative phase considering the whole mixed-use development 'Kop van Zuid'.

2.4.2 Alliance model

In case of the alliance model it is the opposite of the concession model. All participants are involved in deciding joined regulations, developing mixed-use area, and joined risk management. Keywords in the alliance model are trust and cooperation. The alliance is independent of the parties that initiate it and operates on an autonomic basis. A board with equal members of the different parties involved has the responsibility over the mixed-use project. Every member can be replaced at any time and in the beginning of the contract decision making the client is first responsible before setting up the organization structure (Samkalden et al. 2007).

The structure of the Paleiskwartier in s-Hertogenbosch is a good example of an alliance model that has proven to be successful in case of mixed-use development. The initiative and development of the Paleiskwartier started in the 80's, but the real breakthrough came in 1995 when the municipality of Den Bosch, Volker Wessels, ING and NIB capital bank signed an intention agreement for the development of the Paleiskwartier. These parties started a company (BV). The goal of the company was to develop the area; together they would create edge conditions and share the risks of the development. The contract they share is an open contract without many boundaries and demands with fines, but clear legal conditions. The basis for the contract is therefore trust.

The PPP construction in based on the alliance model, remarkable in the contract is the role of the municipality in the contract. They really are a partner in the contract who share the risk but also the benefits and without them the PPP construction would not hold.

Furthermore by the collaboration and presence of the municipality there is a financing advantage for the whole company because they can lend money from a bank for a low interest rate.

2.4.3 Traditional model

The traditional model exists of private development and public development. The private development is in charge of the process throughout all stages, but assistance may be offered by government during planning and financing stages (Groenendijk, 2006). This assistance is only vital in Brownfield sites, because of the large amount of problems that can emerge during process. The second development is initiated by the government during the whole process and
in mixed-use development in charge of public facilities on the site. Both these organizational structures are in the large urban redevelopment towards mixed-use not sufficient, because of great financial risks for one party and lack of expertise at all functions applicable in mixed-use development.

An urban redevelopment project is large scaled and complex process, which asks for a good game play between public and private parties (Klaassen, Smeets, van de Ven, 2008). In mixed-use development mixing different functions and involvement of many stakeholders makes it difficult towards the success of the project. Important factor for succeeding in this is to optimize cooperation between public and private parties. As seen in different mixed-use development in the Netherlands a healthy cooperation (good operating organization) is one of the factors that have influence on value creation/value capturing (Jansen Klomp, 2008).

**Types of financial structures**

To start an urban redevelopment process financial incentives are necessary to explore, but more important a strong financial structure. Which financial structure is ideal for the organizational structure to choose for? Also important to mention is factors that play an interesting role in urban redevelopment (some cases Brownfield redevelopment, Eindhoven or Tilburg) like land use possibilities, infrastructure available, and close to the site and, important to local authorities, political support (Groenendijk, 2005). These factors influence the finances of a project corresponding with the procedural factors and land ownership factors.

**2.5.1 Governmental incentives**

Also mentioned during the interviews were the use of financial incentives that is not only a promotion, but, more important, a financial value driver to the liability and trust of the government during process towards mixed-use development. An example of such incentives are the allowances of the central government in infrastructure of the municipality of Rotterdam. The central government provided a large amount of money to give a boost to the public transport situation and infrastructural situation of ‘Kop van Zuid’, which gave the private developers a feeling of the great plans of local authorities in Rotterdam. Incentives can have different purposes, like infrastructural upgrade, land-use possibilities (cleaning up land) or small inside project construction (theatre, library). All these efforts and money spend have a positive influence on interest and trust of private developers.

**2.5.2 Financial possibilities for governments**

There are several different financial structures for urban redevelopment to be discussed shortly before the governments approach will be pointed out.

- Tax increment financing: urban development initiative will create new value and that this future value can be leveraged to finance some of the activities needed for other redevelopment projects. Growth of property tax and, more general, all tax revenues can be linked to these investments; (Groenendijk, 2006)
- Benefit sharing and claw-back: The functional meaning of this financial structure is to make sure those subsidies or other financial means will be shared on equal level. The benefits of private developers are the benefits they need and not the ‘excess’ benefits; (Groenendijk, 2005)
Development charges: Developers are asked to pay for their fair share of facilities and services which will be beneficial to their project. This charge is a "price" paid by the developer based on the user-pays-principle; (Groenendijk, 2006)

- Cost impact mitigation payments: The developer is required to meet the costs arising from the unanticipated demands of the development or to compensate for the detrimental environmental effects of the project (polluter-pays-principle); (Groenendijk, 2006)

- Integrated contracts: This is the main financial instrument seen at the mixed-use development models discussed during the interviews. The organization is supposed to deliver not only a product, but more important a service over a long period of time. There is also a concept that an alliance model has three parties in it with both risks and revenues equally divided.

2.5.3 Financial approach for governments

The current practice of value capturing and cost recovery of the Dutch government is important to acknowledge. To set up a business model that represents the cash flow for financing and cost recovery of urban development and, in our case involving mixed-use areas with a prominent role for leisure activities.

Until 2007/2008 value increase of land caused by a change of the admitted land use in a legally binding planning document (agricultural land use to commercial development) falls to the landowner.

The actual legal possibilities for the government for value capturing in the case a private land owner develops the land himself, are mainly limited to cost recovery; (De Wolff, 2007).

In this situation two legal instruments the government could use for recovering of costs some of the investments done by these local governments. The Land development Agreement (Exploitatieovereenkomst) and a cost recovery tax (baatbelasting) could recover some of the costs made by the local government.

The first instrument intends an active cooperation between land owner and local government (bestemningsplan). First new land use possibilities need to be discussed by the modification of local legally binding development plan and secondly the care of the government of serving the land. The local authorities are obliged to make a land development byelaw, which implements a financial contribution in the costs of the servicing of the land.

The second instrument is cost recovery based on taxation. The local government Act provides the local municipality to levy special tax for cost recovery of public facilities (baatbelasting).

There are several useful ways to generate a certain cash flow after/during mixed-use development. The financial cost and revenue structures have a close relation with the organizational structure that has been chosen. When chosen for an alliance model the revenues and cost will be divided between partners inside the company in it. When the concession model is chosen revenues towards local authorities is changing and less risky.
Conclusion
When the value price of a certain house in an urban area has to be determined, the answer from
different involving parties (real estate agents, project developer, municipality and more) is most
of the time "location". Not the house itself is important in this, but more the value
characteristics of the location/surroundings of it.
The information mentioned above can closely be seen to a decision made by the local
authorities and in some case the province or central government in urban redevelopment. Every
authority, local or central, strives for quality improvements in urban areas. In the research,
value characteristics that are important for local authorities in mixed urban areas will be looked
at. The general vision of governments towards mixed-use area is that they can be seen as a
positive influence towards the municipality. Land available for inner city development should be
used properly and optimal in the eyes of municipalities and also have value developments
towards the area and its surroundings.
Nowadays more value is pointed out to a service industry in the Netherlands and creates an area
with more functions. All these functions will be connected with high quality public
areas/facilities and public transport functions that are demanded or controlled by the local
authority. When starting a mixed-use area, one of the important goals for local governments is
to realize a dynamic, 24/7, and high living quality area, with the use of the three functions
working, living, and leisure.
The financial structure to appoint in the business model will be a complex research. In case of
this complexity chosen is to subscribe the financial structure towards value developments
wished for by the municipality. The complexity is mostly based on the cost and income revenue
of a municipality, because there will always be uncertainty about where money came from and
where some of the cash flow is going to.
Organizational structure is of great influence on mixed-use development in case of:
- Financial possibilities;
- Value developments wished for by governments;
- Mixed-use possibilities;
- Time planning and quality of development.
3 Value and value characteristics

Introduction
To understand if a redevelopment project or more specific a mixed-use development is successful it has to create value, for the area itself and for the surrounding areas. What value is and in which ways value can be developed will be determined in the following chapters.

Defining Value
Value is difficult to define, much easier is the definition of price. The price of an object is mostly determined by market forces and becomes definable in terms of a currency. The value of a specific object is subjective, time based, changeable and determined by the situation. Value of an object is depending on the functional environment, social environment, build environment and the physical object characteristics (Visser and von Dam 2006). The difference between value, price and costs is visualized in figure 3.2. As visible the difference between the cost and the price is the profit, the difference between the price and value are the advantages that the environment has on the object and the use of the object is the difference between the costs and the value added by the users. (Hilgers, 2008)

The next paragraphs will answer how value can be added to an area with adjustments or the adding of different functions to a specific area. In general the value of an area can be created when safety, livability, economic vitality and the amount of facilities are on a high level. The area serves the business, inhabitants and the visitors to its qualitative needs.

Value characteristics
Value characteristics describe to users the value added to the product. The characteristics are measurable items and make comparison between products possible. Value characteristics are characteristics which influence the value of the area in which they are implemented. For mixed-use areas such value characteristics have been defined and can be used for distinguishing an urban area. In the next paragraphs the different value characteristics for the different functions in mixed-use areas will be explained.
3.3.1 Residential value characteristics

Within residential areas different value characteristics can be identified and divided into three categories; build environment, social environment, and functional environment.

Built environment

The built environment can be divided into 3 different categories with its subcategories:

- Structures
  - Residential
  - Business
  - Non profit facilities

- Density
  - High density
  - Normal density
  - Low density

- Public space
  - Recreation
  - Safety
  - Lively

According to van Dam and Visser (2006) the influence of these characteristics on the value is fairly large, in urban areas the price of the real estate is depending for 44% on these characteristics.

Social environment

The social environment of residential areas is also of importance for the value of property. The social environment can be divided in three categories with sub characteristics.

- Politics
  - Stability
  - Policies

- Composition
  - Rent or private property
  - Ethical origin
  - Age
  - Education
  - Income
  - Population density

- Safety
  - Reputation
  - Spatial layout
  - Criminality
  - Branding

Not all the characteristics have the same influence on the value of property. Politics in the Netherlands have got a stable influence which is neglectable. The social status of the environment does have an influence on the value. For example, in areas with high unemployment, low education and low income, the prices of properties are relatively low. The same counts for a higher percentage of foreign inhabitants in neighborhoods. The composition in housing stock (rental vs ownership) is not very important and the difference in value is neglect
able.

Functional environment
If the functional environment of an area is analyzed, different value characteristics can be identified:

- Service
  - Health care
  - Sport
  - Culture
  - Commerce
  - Education
- Employment
  - Near business areas
  - Far business areas
- Accessibility
  - Infrastructure
  - Parking
- Public transport
  - Bus
  - Metro
  - Train

These last value characteristics have got a significant influence on the value of properties. Especially the presence of good public transportation in the neighborhoods and the ability to reach employment areas within a limited amount of time has a positive influence on the property value. Therefore the west of the Netherlands (Randstad) has got higher property prices.

The amount of services in the neighborhood can have a positive or a negative influence. Therefore, the location within areas for services like supermarkets and elementary schools should be well considered to prevent a lowering in prices. (Visser and van Dam 2006)

We can conclude that within residential areas there are a lot of restrictions which could influence the value of property. Therefore, the adding of different services and public areas should be well placed to create the highest value. This research looks for characteristics of an area which influence is only positive (value drivers) to create an area ideal for living. In the qualitative research part of the report there will be special attention to these value drivers

### 3.3.2 Working value characteristics

According to Willegers (2005), the choice to settle in a specific office building is depending on the following factors:

- Esthetic view of the building;
- Accessibility;
- Quality of the public environment;
- Image of the area;
- Knowledge infrastructure.

During the redevelopment of an area these are the most important value characteristics for businesses.
3.3.3 Leisure value characteristics

The leisure component in the mixed-use area is a component that can be placed under the residential “service”. But the amount of services is a lot broader than in the chapter for residential. Leisure is a collection word for, as said before, everything with the goal to entertain, relax or entertain the customer. In Table 3-1 is visualized which objects belong to leisure possibilities.

Table 3-1 Leisure possibilities (Koopmans 2007)

<table>
<thead>
<tr>
<th>Health &amp; Sports</th>
<th>Outdoor recreation</th>
<th>Entertainment (dagdeel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beachhal</td>
<td>Festivalterrein</td>
<td>Autocentraal</td>
</tr>
<tr>
<td>Daneschool</td>
<td>Golfbaan</td>
<td>Bioscoop</td>
</tr>
<tr>
<td>Fitnesscenter</td>
<td>Minigolf</td>
<td>Bowlingcenter</td>
</tr>
<tr>
<td>Kunstrijksaal</td>
<td>Park</td>
<td>Casino</td>
</tr>
<tr>
<td>Klimhal</td>
<td>Redel/Kabelbaan</td>
<td>Karftbaan</td>
</tr>
<tr>
<td>Manage</td>
<td>Speeltuin</td>
<td>Kinderfeesthal</td>
</tr>
<tr>
<td>Sauna/thermeenkoplex</td>
<td>Sportveld</td>
<td>Lasergame</td>
</tr>
<tr>
<td>Skateshala</td>
<td>Uitdrijktoren</td>
<td>Museum/galetij</td>
</tr>
<tr>
<td>Skibaan</td>
<td>Wandel- fiets- en ruiterroutes</td>
<td>Pool/biljart/snooker</td>
</tr>
<tr>
<td>Sportaccommodatie</td>
<td>Waterlo (kabel)</td>
<td>Reitafhouding</td>
</tr>
<tr>
<td>Squashcentrum</td>
<td></td>
<td>Stadion</td>
</tr>
<tr>
<td>Tenishal</td>
<td></td>
<td>Schouwburg/concerthal/theater</td>
</tr>
<tr>
<td>Zwemhbad</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Not every object in the figure is suitable in a mixed-use area. Therefore there will be a selection of these objects which will be tested though our survey. The best suitable leisure objects for mixed-use areas will be pointed out.

Conclusion

The main goal in urban development projects is to create value. The various parties working together want to create value for themselves, for the organization they work for and for the specific area that is subjected to various interventions (Suurendonk, 2008). Different value characteristics can create this value. Value characteristics are characteristics which influence the value of the area in which they are implemented.

With the development of a mixed-use area the value characteristics with the most positive influence should be implemented in the design. In general it can be concluded that the following factors influence the value of the area:

- Accessibility;
- Image;
- Building properties;
- Quality public space;
- Facilities (inc. leisure functions);
- Livability;
- Social environment;
- Knowledge infrastructure (Jansen Klomp, 2007).

In appendix 2 is the long list visible with the (more concrete) value characteristics which are chosen for our survey to extract the most positive ones.
4 Theory business model

The target of this research is to design a business model. The New Oxford American Dictionary has the following definition on business models: "a design for the successful operation business, identifying revenue sources, customer base, products, and details of financing". In our case this will be the successful operation between organizational structure, financial revenue/costs and value characteristics that influence value creation for mixed-use development.

Introduction

Chosen is to set up a business model, because of a set of elements and their relationship in earning money logic, or better said in our research the important value characteristics in mixed-use areas that contribute to value capturing / creation. These relationships between value characteristics, organizational structure and governmental requirements will be the key element in our business model. Also the importance of these relationships, which will be researched in the house of quality, is crucial in the business model structure.

Before starting the survey and QFD research a concept business model is created to compare with the final outcome of the house of quality matrix. Most important governmental requirements of mixed-use development and value characteristics will be mentioned and have direct impact on the finances of the organization. The organizational structure used by the government (organization) will result in a certain cost and revenue stream. Below the important elements of the business model before starting with the QFD research approach.

![Diagram of important elements of a business model]

The financial structure is linked with three important elements, revenue, cost and cash flow. The financing aspect and revenues of the development of mixed-use property is left out of the context of this research because it is too complex. Incoming revenues for municipalities of the project are most of the time invested in other projects or processes within city boundaries.
the research, focus is not on these three elements but on value creation/capturing aspects, which are influenced by the value characteristics approached.

**Value capturing/value creation**

The financial structure of the business model is a structure based on value drivers that stimulate the revenue stream towards value creation. In this financial structure, the goals of the government pointed out together with the value drivers form the success/continuity of the mixed-use area that will or are developed. The value drivers are split up into two different ways, financial and operational. Within a production company example of an operational driver is the quality of a product and the financial driver is the turnover of the product. The mixed-use redevelopment situation is mentioned in the figure below.

### Mixed-use value developments for governments

![Mixed-use value developments for governments](image)

**Figure 4-2 Success/continuity of a mixed-use inner city development project**
**Qualifiers and winners**

Performance indicators of companies/organizations are derived from critical success factors (CSF). Also, the success and the continuity of a company are influenced by these factors. Management teams of all sorts of companies are influenced by these CSF. Qualifiers and winners are two sorts of factors that are involved in these CSF's. Qualifiers are factors minimal essential to operate inside a certain market and winners create a better result and differentiate your product/company from the competition.

These CSF’s have great connection with our situation of value characteristics and their positive influence on value creation inside a mixed-use area. The value characteristics can be divided into these two factors inside the CSF’s. In the depth interviews with the governmental experts value characteristics were mentioned that were in our view qualifiers. These characteristics are a necessity for the mixed-use redevelopment in every city to create a success and make this urban redevelopment project a success. The results that come out of the QFD method and, more specific, the house of quality matrix are qualifiers and become the basis of our business model.

The winners will differ per area when the redevelopment to a mixed-use area is started/initiated. Every major city in the Netherlands has different historical factors and function development that influence the classification of their city and the future urban sprawl. For example, in the municipality of Tilburg the redevelopment of the Spoorzone area will be influenced by a major culture quarter that have main function inside the mixed-use development of the area. In Eindhoven also culture is important to be created, but main characteristic mentioned, was the use of old historical Philips buildings for new innovative/creative businesses to create an R&D area near inner city.

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**Business model**

![Diagram of Business Model](attachment:Diagram.png)

*Figure 4-3 General business model (Osterwalder 2006)*
The following paragraphs give an explanation of all factors mentioned in the business model that influence each other resulting in creating value in the mixed-use area. All relationships between different factors pointed out and the chain that has to be followed to end in the goal mentioned in the revenue structure.

4.4.1 Governmental requirements

Governmental requirements are based on the internal structure that is necessary and influenced and controlled by the government to successful start up and redevelop inner city areas. Three factors inside the governmental requirements have major importance in creating a healthy base for the external market. Organizational structure, resources and value configuration are these three factors and will be explained in the following lines.

Organizational structure

During the depth interviews different organizational structures were mentioned to have positive influence on the redevelopment process. All governmental experts pointed out the same kind partners they are working with during pre phase and realization. The organizational structures all had some kind of investor and project developer inside the team. Difference in most of the cases was the way of working together, different examples were mentioned:

- The working company Strijp BV, with control and influence of government (municipality of Eindhoven) will realize most of the governmental goals involving the redevelopment to a mixed-use area. Every party inside the working group realizes different parts of the whole area and creates their own cash flow; Paleiskwartier BV and Spoorzone BV, have three equal shares inside these working companies. The government works closely together with two other partners, an investor and project developer. All three parties share cost and revenues out of the development of the Paleiskwartier/Spoorzone area;
- When on the "Kop van Zuid" in Rotterdam a new development takes place a suitable party is asked to tender. The developments on the "Kop van Zuid" are fragmented because of the long term plans. All involving parties mentioned have positive influence during pre phase and are still involved in contributing to a dynamic mixed-use area.

Resources

The resources are vital connections that make the organization structure and the inner city redevelopment work. Financial resources, political bases and partner trust will be the clue to success in the bases to a well set up and value capturing mixed-use area.
All parties involved should have sufficient financial strength to cope with a major project that redevelopment to a mixed-use area is. When governmental influence is great inside a working company, like the paleiskwartier BV, meaning share of cost and revenue a decrease of risk will occur during financially problematic times according to the governmental experts.

In case of redevelopment of an area a large amount of money is necessary in pre phase and executing phase. There will be a connection with the value drivers that are a necessity in the beginning of a mixed-use development to make it a success. These factors that depend on a large investment from all parties are difficult to explain over a long term planning towards most of the politicians (because of the political movement every 4 years). For example investing in an expensive cultural/creative centre inside the mixed-use area to attract a certain working group is difficult to explain, because of the lack of result you can show in a short term planning. 
Partner trust is always an important factor when going to work in a long time partnership, which
Involves great risks, great amounts of money and maybe even failure. To regain each others trust in an early stage all plans and goals have to be clear before even started.

**Value configuration**

The value configuration consists of the composition of different functions in a mixed-use area which give it strength. The composition of the three factors inside mixed-use, working, living and leisure is a decision that can influence all factors inside the external market. When the composition of the three functions is not correct tackled the value drivers suffer from it and have effect on the value creation.

### 4.4.2 External market

The external market consists of three subjects: value drivers, channelling and costumer segments. These three factor form the bases for the market segment on which the tender parties want to focus.

**Value drivers**

The value drivers are depending on the results of the survey, the survey has its focus on different value characteristics. The best value drivers, according to governments, for a mixed-use area will be taken into account in the business model. The different core activities form the bases of these drivers.

**Channelling**

To create interest for the redeveloped mixed-use areas, the society should feel a certain connection with the area. Therefore the goal for the area / of the BV has to be clear, the branding for mixed-use redevelopment projects is very important because the projects are large and cause a change in functions previous to the development. This attraction can be created throughout different channels.

First the area should have an appealing landmark that is known throughout the city and beyond. Examples of these landmarks in mixed-use areas to be are hotel New York (Rotterdam), Klokgebouw (Eindhoven), and courthouse (Den Bosch). These landmarks create an environment which sets out opportunities for the rest of the area.

Secondly if the future mixed-use area had a historical value for the city, these historical features should be embedded in the future design of the area. In most cases the redevelopment areas were old brown fields which made the city to what it is today. Therefore there should be a thorough assessment for these buildings to make a choice between demolition and revitalizing, because some of the revitalized old buildings can be a value driver of the area and this will affect the branding.

The third and last feature in the channelling is the choice for which businesses the area is suited. This choice will affect the brand of the area. This is an important choice which the BV should make but is also depending on the location and goals of the city.

**Customer segments**

The customer segment is depending on the choices of the development BV, what the business focus is and what value divers are embedded in the design. Therefore we can't say anything about these segments because they will be depending on the results of our research.
4.4.3 Finance
The financing aspect and revenues of the development of mixed-use property is, as said before, left out of the context of this research. Added to this part can be that the use of the business model will result in the following value developments:
- Dynamic use of the area 24/7;
- Safety;
- High quality living;
- High quality working area;
- High quality recreational (leisure) area;
- Optimal use of functions;
- Optimal use of scarcity of grounds in inner city development;
- Profit (positive cash flow).

Conclusion
The business model is a helpful tool for governments to approach the different elements in the pre phase of a mixed-use redevelopment project. The four key elements in a business model are:
- Governmental requirements
- Value drivers of mixed-use development
- Organizational structures
- Financial structure
A good fulfillment of these elements can lead to the value developments mentioned in paragraph 4.4.3.
5 Research analyses

Introduction
To get a reliable basis for our future design the investigation consists of depth interviews and a survey under governmental experts. The staring point of this part of the investigation is the depth interviews with the experts (shown in appendix 1). The goal in these interviews is the get an idea of the organizational structures and the different value characteristics in mixed-use areas. The value characteristics from the interviews and the literature will be used in the survey. The goal of the survey is to derive the most important value characteristics in mixed-use areas. Survey is visible in appendix 3 and the survey outcomes in the house of quality are visible in appendix 4. Eventually conclusions can be made which value characteristics and organizational structures should be used by the development in mixed-use areas.

Respondents interviews and survey
The research has its full focus on the government because they are mostly the initiator for urban redevelopment projects. Therefore everyone involved in the research has a strong relation with the government. The governmental experts can give clear views on how they look at mixed-use redevelopments and what they find important in the composition of mixed-use areas. The interviews held in this research were all held with program managers of municipalities for different mixed-use projects in the Netherlands. The projects were all large scale mixed-use areas, while some of them were in the final stage of development others were just starting. The experts in the interviews are also part of the respondents in the survey. The survey consists of 16 experts working for 14 different municipalities and are all involved in the development of mixed-use areas. Most of them are program managers or directors in the mixed-use projects. In the investigation strategic planners for municipalities also were included. Eventually 2 strategic planners were a respondent in the survey. The acceptance of this group of people was far less than with the program managers. Furthermore 10 experts were contacted for the survey who filled in the survey from the point of view from the government.

Research analyses
In the analysis phase two analysis methods where used. For the organizational model the SWOT analysis is used. For the identification of the most positive value characteristics (value drivers) the quality function deployment method is used. In the next two paragraphs the functioning of these methods area explained

5.3.1 SWOT analysis
The purpose of the SWOT analysis is to provide information on the internal strengths and weaknesses of the organization in relation to the external opportunities and threats the project organization will face during process of urban redevelopment. Through the information generated by the literature, depth interviews and the preceding steps of SWOT analysis the fit of organizational model within the urban redevelopment process towards mixed-use area are identified.

The SWOT analysis will give a different view on both models in which strategic issues (principal problems) will be dealt with to avoid undesirable results in the organization. Strategic issues appear during development process and building phase could change because above mentioned issues:
- Size of the redeveloping area;
- Financing the redevelopment process;
- Partners interested and their vision on the process;
- Difficulties of brown field areas (contamination of ground, old expired buildings/structures and differentiation of ground owning).

**Internal environment**

The SWOT analysis is critical in the creation of any strategic plan and begins with an internal assessment of the organization, containing strengths and weaknesses. The internal environment/organization can be influenced or controlled by the organisation itself and basically concern the resources in terms of money, people (skills, knowledge), and policy of the own organization of alliance model or the concession model.

To assess the strengths in the organization it is important to know what makes the organization distinctive. How skilled is the workforce within the organisation? What financing is available for execution? Is the reputation of the organization good?

Regarding weaknesses of the organization, the vulnerable areas of the organization that could be exploited should be assessed. Which tasks are not done well by the organization? Which areas might the organisation improve?

In addition to skills and resources, the nature of the organizational climate, the flexibility of the organizational structure, and nature of the incentive structure needs to be examined.

Summarizing, it is important to know which elements facilitate and which hamper the performance of the organization's tasks and which might facilitate or hamper organizational change.

**External environment**

In the creation of a strategic plan the next step is the external assessment/scan of the environment. It basically concerns the forces/trends and developments in the environment (GSTEP factors: geographical, social, technological, economical and political) that influence the direction and shape of the desired situation and objectives. We examined the current situation the municipality is operating in, in order to seek opportunities and monitor threats. Sources of information that used to analyze opportunities and threats include: governments (local, provincial, national and even international), ideas from interviews, literature, and other sources.

To identify opportunities of the environment, the organisation should ask questions like: What is the strength of the economy? What are the possible new trends in mixed-use developments? Is there a possibility of growth inside the urban redevelopment project? What are the customer/buyer needs? What are the new and innovative ideas in all three mixed-use functions (lean building, new public transport systems, as such)?

To identify threats in the environment one should consider whether other competing projects meet customer needs better (i.e. is there a substitute, are there any alternatives projects). What are possible new regulations and the effects?

Furthermore, the political environment should be in mind while assessing the external environment, since opportunities can easily become threats (and the other way around) by changing developments in the political situation. The nature of political support for existing policy, the political stability, new coalitions, effectiveness of political oppositions, and the one after the other can have great influence on the desired outcomes of the project.
5.3.2 Quality function deployment method

Why is the quality function deployment method in the research of influence of value characteristics in mixed-use areas useful to integrate into the analysis? And why is the QFD method a good base to set up a business model? With these questions the analysis starts. Will this research method bring the target, result that was aimed for in the problem description? The QFD method is mentioned to improve quality of product development and a successful tool in assisting product developers systematically in corporate customer requirements into product and process development (Hao Tien Iui, 2009). Translated to mixed-use research, the QFD method will be a successful tool in assisting us (product developers) in cooperating governmental expert's requirements into a business model towards mixed-use and process development. The QFD method is able to translate qualitative customer requirements into measurable value characteristics and identifies the most important value drivers.

Each phase is composed of its "what's" and "how's", and each phase focuses on the priority analysis of these items based on the information gathered during the depth interviews and literature analysis (Hao Tien Iui, 2009).

Approach of the QFD method: Analysis of the house of quality

House of quality is build up in four phases around the gathered information (see figure 5-2), but the engine that drives the entire QFD process and, in most cases, the QFD researches put their focus on these two phase only:

- How to do it \rightarrow Customer requirements: Governmental experts vision on value characteristics linked with functions in mixed-use development;
- What to do \rightarrow engineering characteristics: value characteristics.

The basic structure of the house of quality matrix is divided in three separated subjects.

![Figure 5.1 House of quality analysis](image-url)
Vertical: “What’s” → In our case these are the functions inside a mixed-use development area. These functions are divided in residential, commercial, and leisure. All these three functions have a different weight that is built out of the composition of a mixed-use area. For example 20% residential, 30% commercial and 50% leisure. In the survey and depth interviews the experts were asked to mention which composition was most suitable and in case of presence more important than the other two functions. This composition is the main key towards the weight given towards these different composites. This weight per function was linked with a relative weight that has to be in total exactly 100%.

$$\frac{100 \times RW}{RW + CW + LW}$$  (formula names changed for our own values out of Hao Tien lui 2009)

Relative weight for residential areas: $$\frac{100 \times RW}{RW + CW + LW}$$

Horizontal: “How’s” → The How’s on top of the matrix are linked with the value characteristics mentioned above (Filtered and structured in themes after depth interviews). The value characteristics have a connection with the three functions of mixed-use development. In the survey the experts were asked to value the value drivers in combination with the functions between 1 and 5.

These values translated into influence rate:
- 1 → no influence towards function;
- 2 → less influence towards function;
- 3 → Medium influence towards function;
- 4 → Much influence towards function;
- 5 → Most influence towards function.

All respondents (governmental experts) have given each value characteristic linked with residential, commercial, and leisure a value that is averaged and pointed out inside the house of quality matrix.

The final stage of the horizontal part of the matrix is the weight of all different value characteristics. All value characteristics are combined with the weight of the How’s (functions) and the average of the value characteristics.

More specific:
- $Aver \rightarrow$ Average value for characteristic linked with function residential;
- $Avcc \rightarrow$ Average value for characteristic linked with function commercial;
- $Avcl \rightarrow$ Average value for characteristic linked with function leisure;
- $RWr \rightarrow$ Relative weight residential;
- $RWc \rightarrow$ Relative weight commercial;
- $RWl \rightarrow$ Relative weight leisure;

Weight of value characteristic: $$(Aver \times RWr) + (Avcc \times RWc) + (Avcl \times RWl)$$  (formula names changed for our own values out of Hao Tien lui 2009)

This last formula gives the final result for each value characteristic linked with each function inside mixed-use development.
Results organizational structure analysis

In chapter 2.4 different organizational structures were mentioned that all can be used in general mixed-use development. After the depth interviews with different governmental experts several organizational structures have been ideal and positively influencing urban development processes towards mixed-use. A short list with different mixed-use projects is made (see table 5-1), mentioning the organizational structures split up in two ways: alliance model and concession model and specified with partners and the most important arrangements made during the process.

Table 5-1 Project characteristics

<table>
<thead>
<tr>
<th>Project</th>
<th>General model</th>
<th>Specified model (partnership and function)</th>
<th>Arrangements (financial and mixed-use developments)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strijp S Eindhoven</td>
<td>Alliance model</td>
<td>Municipality Eindhoven, Volker Wessels and delegated developer Credo together form Strijp S BV.</td>
<td>Every partner inside the Strijp S BV will develop a part of the terrain of Strijp S to create revenue for themselves. Overall arrangements were made for the mixed-use development, specified in public areas, working, living and leisure facilities.</td>
</tr>
<tr>
<td>Paleiskwartier s-</td>
<td>Alliance model</td>
<td>Municipality s-Hertogenbosch, Volker Wessels, NIB capital bank and SPS form together Paleiskwartier BV and delegate Trudo as project developer.</td>
<td>The four partners inside the BV have all same risk, revenue and cost aspects equally divided. In this trust and workable atmosphere were important factors to accompany Trudo.</td>
</tr>
<tr>
<td>Hertogenbosch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spoorzone Tilburg</td>
<td>Alliance model</td>
<td>Municipality Tilburg, European tender is started for private partnership and NS real estate form together possibly management team Spoorzone.</td>
<td>The method of financing preferred by the local authorities of Tilburg in case of the Spoorzone area is a split up, shared risk financing plan. In this plan the local authorities share equal parts of payments and</td>
</tr>
<tr>
<td>Kop van Zuid Rotterdam</td>
<td>Concession model</td>
<td>Municipality Rotterdam is initiator for different parts of the project through European tender</td>
<td>There is a covenant between central government and municipality Rotterdam about structure plan that covers 20 years of development till 2010. Inside the project area different partnerships initiated that have to suffice the plans of the local authority</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------</td>
<td>-------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Zuid as Amsterdam</td>
<td>Alliance model</td>
<td>Zuid as center NV is combined by different real estate partners, central government, local authorities, banks, developers and other stakeholders</td>
<td>The partnership is involved in all phases of the process. In this management partnership 20% of the cost and revenues will be taken by municipality Amsterdam, the other 80% is divided between parties involved.</td>
</tr>
</tbody>
</table>

After several depth interviews it can be concluded that choosing an organizational structure is a difficult issue in the process towards an urban redevelopment project. Size of the developing area, money to be spent towards mixed-use development, partners interested in the project, and difficulties of brown field areas (contamination of ground, old expired buildings/structures and differentiation of ground owning) are issues that have a great impact on the organizational structure a municipality will chose.

Ideal in this is to make a SWOT analysis to show what the strengths and weaknesses of both models are in the light of the different examples mentioned above. On the next pages in figures 5-3 and 5-4, the SWOT analyses for both organizational models are given.
**Alliance model SWOT analysis in mixed-use process**

### Internal Environment

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Several parties are involved inside organization, which multiplies knowledge, data and quality of development plans, only possible with open communication</td>
<td>Several parties have differentiated views on the expected result, which can undermine the vision and goals mentioned in the contractual structure</td>
</tr>
<tr>
<td>Cost aspects, risk and revenues equally divided or divide by input of different parties</td>
<td>The reputation of several partners can negative influence the process in case of timescales, deadlines, pressures and financial possibilities</td>
</tr>
<tr>
<td>Governments involvement inside organization decreases financial risk, because lower interest rating of loans with Dutch Governmental Bank</td>
<td>Economic stronger partners sometimes dictate the boundary conditions against weaker partners, that has an effect on the cooperation</td>
</tr>
<tr>
<td>The contractual structure (legal conditions) setup before starting process embrace the fact that allancing avoid disputation and litigation during process</td>
<td>Commitment and leadership sometimes is lacking because of same interests and visions. This can have effect on time planning, quality and effectiveness of process. Vertical and horizontal relationship of partners needs to be discussed (unanimous decision making is important in this)</td>
</tr>
<tr>
<td>Building time is decreased due to regulations and visions set up in initiative phase. Every partner knows what is expected and created inside urban redevelopment process towards mixed-use</td>
<td>The whole organization is depending on the representatives of the different partners, the representatives have to be compatible.</td>
</tr>
<tr>
<td>Value development characteristics (quality of living, high quality public areas, public transport facilities and leisure possibilities) have more importance due to governmental influence inside the alliance organization structure</td>
<td></td>
</tr>
</tbody>
</table>

### External Environment

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation and market developments of one or several partners that interest the mixed-use development</td>
<td>Political movement every 4 years can have great influence on financial possibilities during process</td>
</tr>
<tr>
<td>Continuous optimization of design, building methods and project process</td>
<td>New legislation rules can have effect on environmental, commercial and leisure possibilities</td>
</tr>
<tr>
<td>The chosen representative of every partner needs to be qualified suited to mixed-use development inside the organizational structure</td>
<td>New market demands in case of working, living or leisure functions could effect value development inside mixed-use</td>
</tr>
<tr>
<td></td>
<td>Decrease of economic possibilities due to credit crush and possible drop out of partner</td>
</tr>
</tbody>
</table>

*Figure 5-3 SWOT analysis alliance model*
Concession model SWOT analysis in mixed-use process

<table>
<thead>
<tr>
<th>Internal Environment</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengths</strong></td>
<td>Governments need to translate their goals and possible specification towards goals/results clear and specific to determine problems with private parties about their working space</td>
</tr>
<tr>
<td>Concession model is focused on a vertical relationship between client (municipality) and contractor which means value drivers important for government will be pointed out in an early stage and realized in a general way</td>
<td>Technical, legislation and financial boundaries need to be clear as possible</td>
</tr>
<tr>
<td>Contractual structure is clear due to European tender and rules and regulations about deliverables (instead towards alliance model that is more based on a trust level between partners)</td>
<td>Lack of efficiency during process by contractor will lead to fines and missing deadlines</td>
</tr>
<tr>
<td>Mixed-use development area can be divided in several areas of construction, which means different contractors involved, greater risk/financial spreading, lowest price contract (European tender) and involvement in time planning</td>
<td>Value developments are not directly influenced by municipalities, despite rules and boundaries appointed by partners</td>
</tr>
<tr>
<td>Government works output orientated, which gives contractor enough space influencing not the product but more the result in a central position</td>
<td></td>
</tr>
<tr>
<td>Risks will be controlled by the most sufficient party meaning investing costs are paid by the private party</td>
<td></td>
</tr>
<tr>
<td>Different contracting models between client and contractor are possible that is suitable to the mixed-use redevelopment project</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>External Environment</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Opportunities</strong></td>
<td>Political movement every 4 years can have great influence on financial possibilities during process</td>
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<td>New market demands in case of working, living or leisure functions could effect value development inside mixed-use</td>
</tr>
<tr>
<td></td>
<td>Decrease of economic possibilities due to credit crunch</td>
</tr>
</tbody>
</table>

Figure 5-4 SWOT analysis concession model
5.4.1 Conclusion organization model

Both organization models have a 'strategic issue' towards mixed-use development. Concession model is favorable in case of large urban redevelopment project like "Kop van Zuid" in Rotterdam, because of large scale developments and the financial and technical difficulties arisen. Large in this sentence means long planning time (structural plan 1990-2010), different sorts of Brownfield redevelopments inside mixed-use development area, and many different qualities for every small to be developed part inside it. In this is also the help of central government in case of infrastructure, so 'large' in this has interest of the whole Netherlands and not just local bases.

The model is ideal to use when small parts of the redevelopment area will be developed over a long period of time and a specific urban plan is available for the municipality. Unclear is the difference in scale of the project in case of largeness of cost, square meters, and technical difficulties of mixed-use development.

The alliance model is a more used organization model in urban redevelopment towards mixed-use on a more local bases. It has a positive influence on the value developments mentioned by municipalities and financial risks involved. The model refers to open communication and trust which have great influence on the success of the project. When both or one of these issues is missing the organization is not positive towards the process. Also vertical decision making needs to be avoided in positive working sphere. Unanimous decision making can be a helpful tool in this and makes the alliance organization work. The contract form doesn't need a regulation about responsibility but a "No Blame" vision. To help this "no blame" vision a financial impulse to all partners when doing great work has a positive effect.

The alliance model is the most suitable organization model when urban redevelopment is organized towards mixed-use development. All strengths in the SWOT analysis have a positive effect on the value drivers to value development and quality of process (time planning, cost recovery, and value capturing). The weaknesses of the organization model can be influenced in a positive way when the trust basis is guaranteed and 'open' communication is strived for. The Paleiskwartier project is a good example where the trust basis has regulated the process for many years and resulted in an ideal mixed-use environment.

Results survey analysis

With the survey different predictions can be made; on which of the main groups should be the focus with the development of mixed-use areas? What value characteristics have the most positive influence on the value creation in a Mixed-use area? How the area should be divided in the sense of what percentage of the area should be residential, business and leisure.

5.5.1 Allocation of different functions

One of the questions in the survey is how the allocation of the different functions in mixed-use areas should be. The governmental experts did get a series of possibilities and they chose the best suitable allocation. According to the governmental experts the ideal allocation of functions is 50% residential, 30% working, and 20% leisure. It has to be said that this is always depending on the location of the areas and the wishes and demands of the partners in the project. But the latter function allocation is the most preferable.

This is the basis for the weight in the HOQ, as explained in a previous paragraph. The weight will be allocated the same way as the allocation of functions. The results are that the answers of the expert are being weight to importance, a change in weight will also change the outcomes of the most positive value drivers. In the rest of the analysis the 50%, 30%, 20% allocation will be standard allocation.
5.5.2 Main themes

If the main themes of the survey are analyzed, the following graph can be shown. The main themes are visible on the X axis. The values, on the y axis, are the averages of the different value characteristics within a theme. For example the average amount of points scored by the theme building composition is 535. As visible in figure 5-5 this results in a third place in comparison to the other themes.

The figure shows which themes have the most influence on value creation. The second step is, if municipalities start with the development of mixed-use areas they should give most of their attention on the highest scoring themes. This will result in the highest value creation within the area.

In the figure it is visible that the accessibility and the public space of a mixed-use area are very important. This is followed by the building composition of the area. Finally, the sort of businesses and the leisure possibilities have the least amount of influence in the area.

Remarkable is that the building composition scored a significant lower value than the public space while the public space does not directly creates value but is more the atmosphere of the area. But on the other hand this shows that (what other researchers have already said) only 50% of the value of an area is based on the building itself and the rest is based on their surroundings.

It has to be said that the themes businesses and leisure possibilities score lower but this is a direct result of the weight in the HOQ model. Because the high scoring leisure possibilities by the “what” leisure only count for 20% in comparison to 50% residential.

Concluded can be that the accessibility and public space are the most important features in a mixed-use area, followed by the building composition. The kinds of businesses and leisure activities in the area have an influence but should not get to much attention. In the following paragraphs the themes with their value characteristics will be mentioned more specific.

5.5.3 Building composition

The following analysis is based on figure 5-6, based on this figure the building composition can be derived which will lead to the highest amount of value in a mixed-use area.

The red line in the figure (as well as in the following figures) is the average score within the theme and the y-axis are the amount of points granted by the governmental experts.

In the figure is visible that 3 out of 6 characteristics score above average. Most of the value is seen in the

Figure 5-5 Scores of the main themes

Figure 5-6 Scores of the different building components
renewal of historical buildings. This is an aspect that also came forward in the interviews and the survey acknowledges these important characteristics. In the interview the argument for this characteristic was that these buildings create a certain ambition and atmosphere which people enjoy.

The second score above average is the private owned properties; this is a characteristic which in comparison to rental and social properties score the highest. This is not very strange but it has to be said that the municipalities will not create mixed-use areas with only private owned properties but will always create a percentage of the other properties in the area. The reason is that the governments also have a social obligation towards society.

Last but not least is the building height of the area; governmental experts prefer heights not higher than 4 layers.

5.5.4 Businesses

One of the functions in a mixed-use area is the presence of businesses in the area. As visible in 5-7, in total there are 5 kinds of businesses possible in mixed-use areas, out of these businesses 3 score above average. The service business (consultancy, banking, insurance etc.), creative business (artists, architects, advertisement etc) and governmental offices are the best scoring businesses in this main theme.

This is not very remarkable because the other two kinds of businesses are able to present a negative image due to the fact that they can easily affect the area in a negative way. For example the air quality can go down due to heavy industries.

5.5.5 Public space

As said in the paragraph main themes, these are the highest scoring characteristics of the survey (see figure 5-5). This can be explained because a nice public space in the area will benefit all 3 functions in the area. Therefore this aspect, overall, does score the highest. Theme parks score the highest values (see figure 5-8) and therefore benefit the value of the area the most. This shows that people like to live, work or recreate in a green environment.

High quality public streets/domain does also score very high, together with open spaces. While water areas and playgrounds score far less but still above overall average. But again the explanation for this outcome is that public space has a positive influence on all 3 functions and the weights do not matter very much with this theme.
5.5.6 Accessibility

In figure 5-9 is visible that accessibility also has high scores, the same analysis can be made. Accessibility is also a theme which is important for all the functions in the mixed-use area. Overall it can be said that public transport in a mixed-use area is very important. Especially train and bus connections have a lot of influence on the value of living working, and recreation, they score above average.

The most important characteristic is a good accessibility by car; most people whether they work or live in an area want to be able to access the area on a nice comfortable way. Furthermore, the next characteristic has a very positive influence, the connection to other areas like city centers or freeways. Especially for businesses this is an important characteristic (see appendix 4 it scores a 4.50 out of 5 which is the highest value scored after parks) because they often have to receive or go to clients and it is easy if they can get there in an easy way.

If the last two characteristics in the figure are compared there is an obvious preference to underground parking. This will benefit the area a lot compared to above ground parking but it is not a characteristic which scores above average in accessibility but compared to the overall characteristics it scores very high.

But it can be concluded that train connections, bus connections, accessibility by car and connection with other areas are the most important in the theme accessibility.

5.5.7 Leisure possibilities

Figure 5-10 shows the scores of the different leisure possibilities in mixed-use areas. These scores are a lot lower than the previous two main themes. This has two reasons, for one, real leisure possibilities score highly on the leisure function in mixed-use. Secondly the leisure function only has a weight of 20% in comparison to 50% for residential, therefore the overall scores of leisure functions go down.

But eventually the survey does get the most suitable leisure facilities for a mixed-use area. From the 15 facilities 8 were found above
average positive for a mixed-use area.
The real leisure functions in the area which are positive are Horeca, sports facilities, swimming pool and theatre. These value characteristics in a mixed-use will benefit the area the most positive. It is not that the other characteristics won’t benefit the area, just not as much. The other four characteristics are more in a grey area, they are not real leisure but also not business. These are a small shopping mall, large shopping mall, supermarket and educational facilities. Out of the small and large shopping mall the small shopping mall is chosen because this is the highest scoring, and only one out of these two can be developed in a area. But it is very obvious that they both benefit the area very positive according to the governmental experts.

5.6.8 Conclusion Survey

Based on the analysis in the previous paragraphs it can be concluded that, according to governmental experts, the following value characteristics in table 5-2 have the most positive influence on the development of a mixed-use area.

From this point on the following value characteristics will be called "value drivers" because they influence the mixed-use area on a positive way.

Table 5-2: Value drivers based on QFD model

<table>
<thead>
<tr>
<th>The value drivers</th>
<th>Businesses</th>
<th>Public space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building composition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private owned property</td>
<td>Service business</td>
<td>Open spaces</td>
</tr>
<tr>
<td>&lt; 4 building layers</td>
<td>Creative business</td>
<td>Park</td>
</tr>
<tr>
<td>Renewal historic buildings</td>
<td>Governmental offices</td>
<td>High quality public domain</td>
</tr>
<tr>
<td>Accessibility</td>
<td>Leisure possibilities</td>
<td></td>
</tr>
<tr>
<td>Bus connection</td>
<td>Horeca</td>
<td>Theatre</td>
</tr>
<tr>
<td>Train station</td>
<td>Small shopping mall</td>
<td>Education facilities</td>
</tr>
<tr>
<td>Accessibility by car</td>
<td>Supermarket</td>
<td>Swimming pool</td>
</tr>
<tr>
<td>Connection with freeway and center</td>
<td>Sport facilities</td>
<td></td>
</tr>
</tbody>
</table>

Furthermore it can be concluded that the themes public space and accessibility have the most positive influence. This is a result of the QFD method applied in the research because the QFD calculates with a weight. These two themes score high values on all three functions.

Finally it can be concluded that the optimal allocation of functions in a mixed-use area is, 50% residential, 30% working and 20% leisure. This is the optimal allocation of functions, when the allocation is changed in the QFD model/design other value drivers can become the most positive value drivers.

Conclusion

After the analysis of the organization and the value characteristics the government prefers the following points:

1. With the development of a mixed-use area, the alliance model is the most suitable organization.
2. The value drivers described in table 5-2 have the most positive influence in a mixed-use area.
3. The value drivers described in table 5-2 benefit almost all functions in a mixed-use area, this is why they score the most points and why they are the best value drivers for a mixed-use area.
4. The optimal allocation of functions according to experts is 50% residential, 30% working and 20% leisure.
6 Design

Introduction
In the design phase the business model for the development of mixed-use areas is constructed with analysis of the QFD method, the literature study and different depth interviews with governmental experts. These three analysis phases form the eventual business model. The business model is a tool for local governments; the tool helps municipalities with the start towards mixed-use area development. If the tool is "followed" the next chapter describes what the consequences are and how the optimal value development can be created.

Business model
Based on the analysis the following business model can be designed.

![Business model diagram]

Figure 6-1. Business model for governments to develop mixed-use areas

In the next paragraphs the business model for the development of mixed-use areas will be explained. The dot line surrounding the value configuration and the value drivers marks the two variables in the business model. These two features of the model are depending on the value configuration chosen (percentages), a change in these percentages will calculate the new value drivers with the QFD model.

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Starting point
The starting point of the business model is one of the key factors that have influence on mixed-use development. This will be discussed first before explaining all the influences between different drivers inside the business model. In the literature, research governments were mentioned to be the initiator of the inner-city redevelopment towards a mixed-use area. Government’s actions are that they work from inside to an outside vision. Governmental action is based on looking at what their city needs or is lacking in. Municipalities focus on their own problems and want to develop solutions that influence these problems in a positive way. Private parties on the other hand are looking for public needs and customer trends before starting a business process. This is also the case in the mixed-use development, private parties look at the market trends in urban redevelopment.

In case of the organizational structure an alliance model is favorable, therefore the government has to start with choosing trustworthy partners. Together, the alliance has a good view on what the wishes of the market are. The evaluation of the future customer segment (end user) has a direct influence on the value configuration that will be chosen by the alliance.

Governmental requirements
Governmental requirements are based on the internal structure that is necessary and controlled by the alliance organizational structure to successful influence external market and financial factor (value development). The requirements consist of alliance model, resources that support the organization and the final composition for the mixed-use development.

6.4.1 Organizational structure
The outcomes of the SWOT analysis give a favorable vision on an alliance model to choose for an organizational structure in mixed-use development. In this alliance model important is to seek for partners that are trustworthy, reliable and expert (resources 6.4.2) in urban redevelopment processes. Parties that have positive influence on the outcome of the mixed-use development process:
- Municipality;
- Project developer;
- Investing company

These three parties form an alliance and will accompany one or more delegated plan developers that design, construct and plan the mixed-use development controlled by the alliance. The alliance and the plan developer together create different working groups comprehensive all mixed-use development issues that can occur during pre phase and building process. In the working groups a differentiation of involved people is demanded, so it is possible that one working group from four different parties people are delegated.

Figure 6-2 Organization of a alliance model
6.4.2 Resources
The organizational structure is followed by the resources that are directly influenced by the alliance model. The trust base is one of important factors that make an alliance model succeed in urban development projects. Between the three or more parties there should be healthy trust base and clear set up boundaries. The strengths mentioned in the SWOT analysis (alliance model) are the key factors for these aspects: Trust between parties and financial resources. The trust between parties is based on the following subjects:
- Legal conditions and boundaries set up in contract for healthy process;
- Positive peoples management: Remove uncertainty about quality of involving people from different partners;
- Core quality management.
Secondly, the financial resources of an alliance model are one of less financial risks (influenced by credit crunch), greater possibilities occur because municipalities have lower interest rating for loans with the Dutch Governmental Bank. Causing a continuous stream of money that is always available during process.
Financial resources should be guaranteed when all three parties mentioned in the organizational structure satisfy to all boundaries set up and conditions of a European tender.
One of the threats mentioned in the SWOT analysis was the change of governmental influence during a period of four year. In case of an urban redevelopment towards a mixed-use area the period of process is longer and political change can undermine this. In case of political change the program manager of the municipality has a strong task to be objective and clear about the vision and financial structure for the redevelopment to the new political parties involved.

6.4.3 Value configuration (variable)
After the organizational structure, costumer segment and the resources are determined the interpretation of urban redevelopment process towards a mixed-use area can be started. The composition of the redevelopment area is the next step in the business model to create a healthy base for the value drivers. The consistency between the value drivers and value configuration is the final key towards the value development expected by the alliance. The composition of the mixed-use area will be chosen by the alliance and therefore can change. Due to this fact the composition is variable, a change in composition will result (with the QFD model) in a change in value drivers.
The composition of mixed-use development favorable by governmental experts is:
- Residential zones: 50 %;
- Commercial zones: 30%;
- Leisure zones: 20%.

External market
To develop and construct the final result that satisfies governments in their value developments, the external market should be structured and planned logically. After research analysis a clear view can be described of useful value drivers towards value development. Together with the channeling structure and the customer segment the external market will lead to well-considered and good conditions for mixed-use development.

6.5.1 Value drivers (variable)
The value drivers are the most important components in mixed-use development. In the business model this is visible with the most entering and outgoing relationships to governmental
requirements, external market and financial bases. The direction between value configuration and value drivers as mentioned earlier will be key factor in the value development government will reach. Composition as pointed out in the value configuration aspect is divided in percentages for residential, commercial, and leisure. The value drivers that came out on top after the QFD research method need to be considered as a guarantee of the consistency between mixed-use functions. That"s why interaction is shown between these two aspects in the business model. Also mentioned in the research analysis the interaction between the value drivers and value development (financial aspect) will attract the end users.

6.5.2 Channeling
Channeling in the business model is meant to give the developed mixed-use area a positive branding.
Channeling is closely directed by the value drivers. Some of the value drivers have shown to be of positive branding towards the customer segment and the value development, for example use of historical buildings or landmarks (like "Klokgebouw" on Strijp S). Furthermore the leisure functions and the high quality public domain in the area can be used as positive branding. Due to the fact that there are multiple businesses in the area the businesses can use there knowledge infrastructure to strengthen each other. The alliance should try to get a positive trademark surrounding their area.

6.5.3 Customer segment
With the development of an area the customers are the end users of the area. Therefore the inhabitants of the area will be the end users as well as the businesses and the visitors for the leisure activities in the area. The customer segment is in close relation with the alliance. Governmental vision is as mentioned earlier one that is from an inner towards an outer perspective, meaning, which and how municipalities can upgrade/improve their inner city. For a good customer segment the private parties involved in the alliance model should use their knowledge of the market in cooperation with the other parties. With the cooperation of these parties (public and private) the best suitable connection with the market can be made.

Governmental requirements versus external market (variables)
The passage from governmental requirements to external market is one of two variables. Decision making about the composition of the mixed-use area is one variable influenced by the organizational structure. The choice is based on the governmental wishes and market wishes and is changeable in that case. The analysis and paragraph 6.4.3 show us the most suitable composition at this moment, but is variable. Changing the value configuration in other percentages has direct influence on the outcome of the value drivers, the other variable. The conclusion about these two variables is that a differentiation in the business model is possible, influenced by organization choices and market segment wishes.

Finance
As said before the Financial aspect (costs, cash flow and revenues) is left out of this research. The business model as presented in 6.2 will realize a suitable organization and design of the mixed-use area. This will result in the value developments for mixed-use areas of paragraph 4.4.3 and figure 4.2. These value developments will result in a positive outcome of the finance in the business model and the unique selling points, integrated in governmental vision about urban redevelopment.
Conclusion

The starting point of the business model can be seen as unique welling proposition. The unique welling propositions of mixed-use development are the unique resources such as the cooperation and knowledge that the alliance model initiates. The alliance model set up by the government is the resource that can create a unique position in the market and the ideal base in the business model towards the preferred value developments.

After the unique welling point on the healthy conditions, the business model creates the passage towards the value development the government wants to achieve. The goal of the business model is a helpful tool for governments in starting a redevelopment project converting it into a mixed-use area. The value configuration, value drivers, channeling and customer segment are the tools that need to be applied as mentioned to insure the goals of the government and other partners.

Value developments that governments want to achieve are the unique selling points of the mixed-use area. When the whole process is achieved in a correct manner, as indicated in the business model, governments can achieve a unique product. This unique product (mixed-use area) distinguishes itself, what will lead to the final goal: Value creation.

Evaluation of the business model

To confirm the results of the research, which has led to the designed business model how to start up mixed-use developments an evaluation was done. The program manager of municipality Eindhoven for mixed-use project Strijp-S was interviewed to verify the model by his expert opinion, on the research findings accordance with certain objectives, rules and standards of local governments.

Evaluation of the business model

The business model is a helpful tool for starting up a mixed-use project in preparation phase. The whole research report can be seen as a guiding principle for local governments, who are unfamiliar with mixed-use development or municipalities that need guidance towards choosing an organizational structure, value drivers and composition during project process.

Concluded can be that the business model is very useful especially for municipalities who have not yet started mixed-use developments and have no experience with mixed-use developments.

The business model has one starting point: the organizational structure and resources involved. The expert of the municipality of Eindhoven points out that maybe for the process towards mixed-use development two starting points can have a positive influence. The starting point inside the governmental requirements is well chosen, but at the same time the partners involved have to think about the wishes of the market and the demands of local authorities. This will shorten and positive influence communication during the process towards an alliance model and a clear view on the mixed-use development is indicated. Mentioned by the program manager is a two starting points aligned parallel during pre phase towards composition and the final value drivers coming out of QFD research method.

In case of this parallel starting point, chosen is to strengthen the connection between customer segment and organization model, to show local governments the importance to watch market trends and anticipate on these.

The composition chosen for mixed-use development is in the eyes of the expert a healthy reflection of what the urban development market wants these days. The expert acknowledges
the fact the composition and the value drivers brand the area. Certain value drivers come forward for positive branding, like use of historical buildings, high quality public domain and striking leisure possibilities. The passage (arrow) between these components in the business model is made thicker to indicate this. The possibility to brand the area initiates a change for the municipalities because they should not make what they wish for but should look at the market wishes.

Evaluation of the value characteristics and their influence
During the evaluation interviews with the governmental experts several value characteristics, as quoted in the report, came forward. These characteristics were completely based on feeling, experience and knowledge of the experts and our interpretation and knowledge base after literature study and interviews. For the evaluation of the value characteristics chosen is to compare them with the quantitative research of Ger Jansen and Richard Lee and the AHP analysis of Jasper Snippe and Niels de Hoon.

In their research is concluded that physical and social value characteristics affect the value development considerable more than the functional characteristics. This indicates that branding your area is an important feature and to do so the organization has to anticipate on the customer segment. The functional characteristics mentioned by them in component five and six came out also in our house of quality table. Forrest (green environment), water and education facilities are side effects compared with the social and physical characteristics, but concluded have definitely effect on the value development.

Niels de Hoon and Jasper Snippe have used the AHP analysis to redefine value characteristics with three different parties. The AHP analysis made it possible to make a compromise among the parties for the ranking of these eight Value Characteristics. Individually, Inhabitants value Safety, Entrepreneurs value Accessibility and Housing Corporations value Composition as most important (de Hoon, Snippe 2009). All these eight components and the final three components chosen by the different parties correspond well with the chosen value drivers in the business model. So it can be said the value drivers used in the business model are a reasonable reflection of reality in value development towards mixed-use.
7 Conclusions and recommendations

Conclusions

During the research the following main question was asked.

Main question:
Which value characteristics influence a mixed-use urban area the most positive and how should the organizational structure be with this mixed-use redevelopment?

Based on the literature, survey and the interviews the following conclusions can be made:

7.1.1 Value characteristics

For the development of a mixed-use area (according to governmental experts) the following value drivers have the most positive influence on the value.

Table 7.1: Value drivers based on the QFD model

<table>
<thead>
<tr>
<th>Building composition</th>
<th>The value drivers</th>
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<td>Renewal historic buildings</td>
<td>Governmental offices</td>
<td>High quality public domain</td>
<td></td>
</tr>
</tbody>
</table>

Furthermore it can be concluded that the main themes public space and accessibility have the most influence on the value of the whole area.

7.1.2 Organizational structure

The alliance model is the most suitable organization model when urban redevelopment is organized towards mixed-use development. All strengths in the SWOT analysis have positive effect on the value drivers to value development and quality of process (time planning, cost recovery and value capturing).

- Several parties are involved inside organization, which multiplies knowledge, data and quality of development plans, only possible with open communication
- Cost aspects, risk and revenues equally divided or divide by input of different parties
- Governments involvement inside organization decreases financial risk, because lower interest rating of loans with Dutch Governmental Bank
- The contractual structure set up before starting process embrace the fact that alliencing avoid disputation and litigation during process
Building time is decreased due to regulations and visions set up in initiative phase. Every partner knows what is expected and created inside urban redevelopment process towards mixed-use.

- Value development characteristics (quality of living, high quality public areas, public transport facilities and leisure possibilities) have more importance due to governmental influence inside the alliance organization structure.

The weaknesses of the organization model can be influenced in a positive way when the trust bases is guaranteed and 'open' communication is strived for.

7.1.3 Business model

The business model is ideal to create unique welling and selling propositions for redeveloping an urban area into mixed-use. The alliance model balanced with the resources carried out correctly and value drivers together realize the critical success factors (see figure 4.2) of mixed-use urban areas. The unique selling propositions will be reached as the aspects given in the business model are carried out as they should be mentioned. The final design in visible in figure 6-1 on page 49.

Recommendation

Based on the research it can be recommended to governments and municipalities to use the business model from chapter 6. The model will be the basis for the development of a mixed-use area. If the model is applied the value creation in the area will be optimal.

Recommendations further research

7.3.1 Financial aspects

The financial component of the business model is not discussed, because of the fact that a government can't be seen as a company and the complexity of the financial structure for municipalities. In that case a research towards financial possibilities and more specific how the unique selling proposition change the revenues, cash flow and cost structure can complete the business model.

7.3.2 Relations value characteristics

Relations between value characteristics mentioned in depth interviews, that increase or decrease value towards each other is not converted into the survey. So it is not totally clear which combination of value characteristics will strengthen the mixed-use development. The roof of the house of quality can be helpful to use in case of combining value drivers that were mentioned to be most influential inside mixed-use areas by the survey research and house of quality.
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